

Communities of Practice

A Tool for Creating Institutional Change
in Support of the Mission of the Federal
Energy Management Program

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Federal Energy Management Program

The U.S. Department of Energy Federal Energy Management Program (FEMP) works with key individuals to accomplish energy change within organizations by bringing expertise from all levels of project and policy implementation to enable federal agencies to meet energy related goals and to provide energy leadership to the country.

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Abstract

Communities of practice are organized for professionals such as building engineers, purchasing agents, contract lawyers, facility managers, and others working on common problems to exchange information and ideas that allow them to innovate and better manage the pace and direction of change in their organization. This paper discusses how the Federal Energy Management Program could utilize communities of practice as a tool to stimulate organizational, social, and cultural change to support energy efficiency, renewable energy, and water conservation efforts. Done right, communities of practice have great potential to leverage existing resources. The paper describes the behavior and organizational principles that underlie communities of practices, provides examples of different types of communities of practice, for example, the American Council for an Energy-Efficient Economy Summer Study, EVALTALK, and the Home Energy Pros website. The paper also provides guidance about how to establish a community of practice and a checklist for doing so.

Executive Summary

Communities of practice are a tool that the Federal Energy Management Program (FEMP) at the Department of Energy (DOE) can use as a means to create organizational, social, and cultural change to support energy efficiency, renewable energy, and water conservation efforts. Building engineers, purchasing agents, contract lawyers, facility managers, and others work on common problems in a host of federal agencies. By creating peer networks to exchange information about who plays what roles and how their own roles or those of others need to change, the formal and informal rules that need modification, and the tools they use, professionals can better manage the pace and direction of change.

Communities of practice are networks of practitioners with a shared passion who learn how to do something or how to do something better through repeated interactions. Communities of practice are differentiated from other types of social networks by the fact that members are practitioners with a shared domain of interest who undertake joint activities, discuss issues, and help each other, often by providing information. Communities of practice are voluntary, may be small or large, may interact face-to-face or virtually, and have various forms of governance (often including some type of coordination and monitoring). The American Council for an Energy Efficient Economy Summer Study, EVALTALK, and the Home Energy Pros website serve as examples of different types of communities of practice.

Design principles for such communities include (1) allowing for organic evolution in their structures, (2) opening a dialogue among people with both inside and outside perspectives, (3) inviting different levels of participation over time and depending upon current topics, (4) providing both public and private community spaces, (5) focusing on the value of the community (likely both sharing problems and needs and building a body of knowledge), (6) combining familiarity and excitement, and (7) creating a rhythm for the community.

Communities of practice can be an effective strategy as FEMP uses an institutional change framework for creating behavioral, institutional, and cultural change by providing practical boundaries for systems targeted for change; analysis of the rules, roles, and tools in specific contexts; and specific, evidence based ways that peers could intervene to accomplish change. A major value to FEMP is the ability to leverage scarce resources to achieve its goals. FEMP can create or support existing networks of interested practitioners to develop and improve the use of energy, renewable energy, and water. Communities of practice can extend FEMP's ability to communicate about and solve problems.

To achieve these outcomes, monitoring and evaluating the community of practice is important. Creating a set of expectations or performance measures for how a community of practice might develop and then tracking performance is a way for a community to understand how it is doing. Such measures can provide direction as to what the community might or might not need to do. Collecting performance data also provides clues to when and how expectations need to be adjusted. Finally, performance data can assist in determining whether the effort to form a community may need to be abandoned.

The key issue is whether the community continues to serve a purpose for its members. Communities of practice are potentially an effective tool for accomplishing institutional change by addressing roles, rules, and tools, and they can create an environment conducive to change processes.



1. Introduction

Apprenticeship was and still is an important learning method. An apprentice works beside a master observing, learning, and practicing behaviors that allow the apprentice to become skilled in a craft, an art, or a way of doing things. Apprentices ask questions and make suggestions that evolve the practice. The term apprenticeship is not used as much as in the past, and it has partially been replaced by concepts such as mentoring or communities of practice. The fundamental idea behind these concepts is much the same — observing, sharing information and techniques, and learning by doing.

This document is about using communities of practice as a tool to create organizational, social, and cultural change. Participants in communities of practice speak the same language, offering knowledge, support, and assistance in solving common problems.

Common problems come in many forms. For instance, an engineer operates an HVAC system in a building in a certain way but knows it could operate more efficiently. A purchasing agent knows a more efficient widget should be purchased but doesn't know where to find the product and how to justify it. An agency lawyer has questions about Energy Savings Performance Contracts (ESPCs) that discourage a facility manager from trying to use the mechanism. A government agency requires many approvals that result in a lengthy ESPC process.

For all these problems, there are numerous people of good will out there who have experience and knowledge, playing out their assigned roles, applying formal and informal rules, which may or may not resemble the formal rules, and with or without the techniques, tools, and processes that are relevant to what needs to be done. If these people form peer networks and share their experiences and insights, they can invent solutions and become motivated to change the way they do things and find solutions to their common problems.

Building engineers who are on the front lines of energy use in a host of agencies have similar problems and can share both the technical and organizational solutions they have discovered. A purchasing agent can get immediate help from a colleague who has just faced the same problem while a second colleague shares a list of acceptable efficient items he and a colleague just created. A facility manager finds out from a peer in another part of the agency that there is a lawyer within the agency who understands ESPCs and provides a connection. A peer in a different agency shares information about that agency's not-so-lengthy process, and they commiserate together and talk about what the peer could do.

So what happens? The peer network begins to drive change. People find out who plays what roles and how their own roles or those of others need to change. They discover the real rules including the ones that are not written down and find work arounds to barriers to change. They discover tools or figure out what the tool they need is and perhaps a way to create it. The community of practice can act as an agent of organizational and cultural change by highlighting new ideas and lines of action.

The purpose of this document is to describe communities of practice and how they can be implemented to effect organizational and cultural change. The document starts with a definition of communities of practice and a discussion of its relevance to an organization like the Federal Energy Management Program (FEMP). A framework for behavioral, organizational, institutional, and cultural change is outlined in a text box on the next page. The application of the framework is highlighted in the margin as the reader moves through this paper. The next section highlights the structure and operation of communities of practice followed by a discussion of their benefits. As discussed in Section 4, communities of practice can be emergent or intentionally designed. Three sidebars (EVALTALK,

Communities of practice are drivers of change

Communities of practice can expose the roles, rules, and tools that may obstruct or facilitate change

A Framework for Creating Behavioral, Organizational, Institutional, and Cultural Change

Creating social change requires:

- A clear **goal** or a goal that can be increasingly focused.
 - Awareness of the **boundaries** and context of the system or subsystem (organizational, institutional, or cultural) to be changed.
 - An analysis of the system or organization(s):
 - Delineating the **roles** – especially the key roles – and their essential connectedness to system functioning.
 - Understanding the formal and informal **rules** – or their absence – that facilitate or impede what practitioners are trying to do in their organizations.
 - Describing and evaluating the **tools** – systems, processes, and physical equipment – that practitioners have and don't have to do their work.
 - Identifying needed changes to roles, rules, and tools.
- Using the following principles to select the best strategies for effecting needed changes:
 - **Social networking.** Individuals, groups, institutions, and firms change their behaviors when they observe others who have different patterns of behavior or have changed their behaviors.
 - **Multiple motivations.** Behavior changes for multiple reasons, so it is important to provide multiple reasons for the same individual and for other people within organizations or institutions.
 - **Leadership.** Change occurs when formal or informally recognized leader(s) within an organization provide vision, direction, energy, and charisma to support the change effort.
 - **Commitment.** Change occurs when people and groups make public commitments, or when they enact a new or different behavior and that behavior is recognized by others.
 - **Information and feedback.** Change occurs when there is new information or positive or negative feedback that reinforces an existing or changed behavior.
 - **Infrastructure.** Individual and organizational behavior changes when expectations, rules, or ways of doing things change.
 - **Social empowerment.** Behavior changes when the voices of participants are recognized, and they are encouraged to establish new behaviors.
 - **Continuous change.** Continuous organizational, institutional, and cultural change comes when there is constant assessment and action with respect to goals, feedback, information, leadership, commitment, and multiple motivations.
- Implementing the strategies.
- Tracking, measuring, and evaluating the results of the strategies that are implemented and adjust the goals, identify further changes to roles, rules and tools, and implement new strategies.

American Council for an Energy Efficient Economy (ACEEE) Summer Study, and Home Energy Pros) illustrate the basic points related to the intentional design of communities. The discussion then turns to how FEMP could create a community of practice, followed by a summary and a checklist for establishing a community.

2. An Overview

Communities of practice are networks of practitioners with a shared passion who learn how to do something or how to do something better through repeated interactions.²

Communities of practice are differentiated from other types of social networks by the fact that members are practitioners with a shared domain of interest who “engage in joint activities and discussions, help each other, and share information.”³ Members may interact face-to-face or virtually.⁴ These communities are potentially an effective tool for creating institutional change by addressing roles, rules, and tools, and they create an environment conducive to change processes.

FEMP’s interest in communities of practice arises from its need to engage numerous kinds of practitioners within the federal government and among federal contractors across a range of domains, including energy efficiency, renewable energy, and water savings. Practitioners may be energy managers, facility managers, building operators, maintenance personnel, purchasing professionals, policy analysts, property managers, architects, engineers, and others.

Increasingly, federal and other mandates and directives have required bringing sustainability concepts, skills, technology, and social “know-how” to these practitioners. However, resources to directly engage them are limited. Where resources are limited, communities of practice can provide a powerful way to leverage existing expertise and knowledge among professionals and to implement new knowledge and skills in the context of their organizations.

2 The term was coined by Wenger and Lave, 1991. [Lave, Jean; Wenger, Etienne](#) (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge: Cambridge University Press. ISBN 0-521-42374-0.

3 Etienne Wenger, *Communities of Practice: A Brief Introduction*, <http://wenger-trayner.com/wp-content/uploads/2012/01/06-Brief-introduction-to-communities-of-practice.pdf>

4 Knowledge Sharing Tools and Methods Toolkit - Communities of Practice, <http://www.kstoolkit.org/Communities+of+Practice>

3. Characteristics of Communities of Practice

Communities of practice are voluntary. What makes communities of practice successful at creating change is their ability to generate enough excitement, relevance, and value to attract and engage members and to encourage members to act on what they learn from the group.

Communities of practice can involve as few as half a dozen to several thousand participants.⁵ Governance ranges along a continuum from informal to more formal, with a tendency to the informal end of the continuum, although some communities of practice can be quite formal.

The community has structure

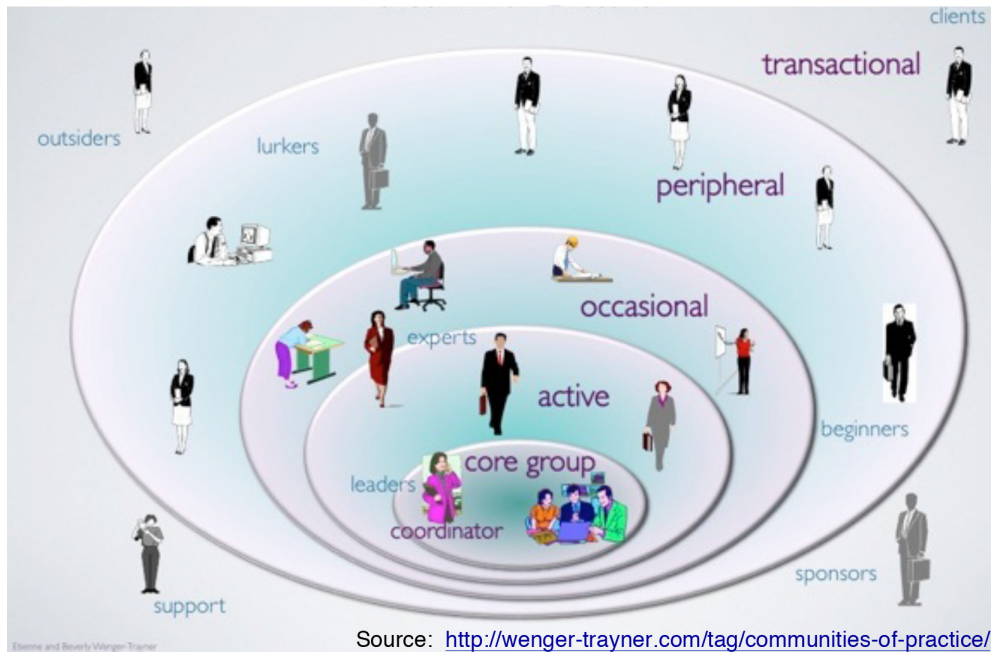


Figure 1. Roles in a Community of Practice

Regardless of size, communities of practice have similarities in the structure of their participation (Figure 1). There is typically a coordinator, a core group of people, active participants, occasional participants, and peripheral participants who may be lurkers or beginners.

The coordinator is responsible for community support and maintenance activities. In a virtual community this role is likely to mean managing the mechanism used to communicate among participants. The core group supports the coordinator and provides expertise. Wenger suggests that this core group is 10 to 15 percent of the participants. The active group is estimated to be 15 to 20 percent of the total participants. The occasional and peripheral participants are the remaining 65 to 75 percent.⁶ The interaction among participants from all groups promotes learning within the community.

5 In the three examples used in this document, both EVALTALK and Energy Home Pros have around 4,000 members. Approximately 800 people attend the ACEEE Summer Study Biennial. The literature cites companies or groups of companies who create communities of practice that number 20 to 40 to address specific needs.

6 Wenger, Etienne, Richard McDermott, and William M. Snyder. *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Harvard Business School Press, 2002.

The community is a network that has permeable boundaries

Roles FEMP might play

The community changes through time

Granovetter,⁷ in his seminal work on the strength of weak ties, observed that participants who bridge networks and are at the periphery of a network bring new ideas and information. The “peripheral members allow a CoP to access ideas and information not currently prevalent in the core group, thereby serving as a catalyst for innovation. The core helps members to act on those ideas and information.”⁸

Figure 1 identifies other roles in a community of practice. These include sponsors, support personnel, outsiders, and persons playing transactional roles. Key roles for an organization like FEMP might be to assist in coalescing and supporting a community by acting as a sponsor and providing expertise letting the members set direction and build sustainable communities in FEMP’s key areas of interest. From a FEMP viewpoint the strategy is to use communities of practice as a resource multiplier, that is, using the much larger network to deliver the information, knowledge, and action rather than FEMP’s attempting to do it all.

Because they are organic and voluntary, communities of practice have a cycle of reasonably predictable stages that develop and change over time. As shown in Figure 2, the cycle typically starts with people who have the potential to develop or share practices; they **coalesce** with one another, define a joint enterprise, and negotiate a community; the community engages in joint **activity**, adapts to circumstances, and renews interest, commitment, and relationships; the intensity of the community declines or **disperses**, but it is still a force and people communicate and exchange advice; the community is no longer central but is **remembered** through stories, artifacts, and memorabilia.

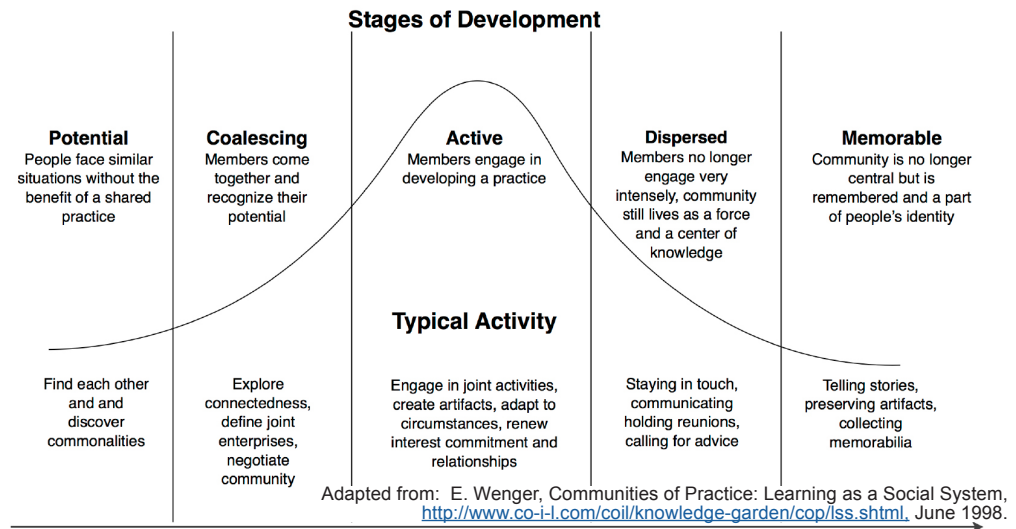


Figure 2. One Characterization of the Cycle of a Community of Practice

7 Granovetter, M. (1983). “The Strength of Weak Ties: A Network Theory Revisited”. *Sociological Theory* 1: 201–233.

8 Paas, Leslie, and Jo-Ellen Parry, Communities of Practice: *An Overview for Adaptation Practitioners*. Institute for Sustainable Development, February 2012. Retrieved from <http://adaptationpartnership.org/resource/understanding-communities-practice-overview-adaptation-practitioners>. They cite Krebs, V. & Holley, J. (2006) and Borzillo, S., Aznar, S. & Schmitt, A. (2011). A journey through communities of practice: How and why members move from the periphery to the core. *European Management Journal*, 29, 25–42.

The length of the cycle can be fairly short, months to a few years, or lengthy, years or decades. The length of the cycle is dependent on the community adapting to change: keeping the community vibrant and relevant, drawing in new members, replacing key participants when interests and careers change and they stop participating, staying aware of changes in the context, adapting the focus of the community to reflect contextual changes and new opportunities, recognizing new options for participation, changing the modes of participation as new technologies arise, and others. Communities of practice are subject to the same forces as other social entities.

4. The Benefits of Communities of Practice

The term “community of practice” originates in attempts to understand apprenticeship.⁹ Communities of practice have several advantages over other ways of reaching and engaging target audiences:

- One-to-one engagement is a most effective way to communicate and to generate needed change.
- Peers quickly establish legitimacy and accept each other.
- Peers have similar problems that require similar solutions.
- Problem solving, focusing on what to do and how to do it, is an effective learning strategy.
- Creating and changing norms among peers is effective in eliminating barriers and facilitating new rules.
- Communities of practice can provide new techniques or utilize existing tools by teaching members of the community how to use them.
- The compounding of one-to-one relationships within communities of practice results in an exponential rather than linear exposure of target audiences to ideas and ways of doing things.
- The content of the communications and activities of communities of practice can be as narrow or as broad as the members of the community deem useful.
- A broad range of disciplinary interests, expertise, and target audiences can be included within a community.
- Many of these benefits have been verified through empirical analyses.

**The many
benefits of
communities of
practice**

⁹ Etienne Wenger, Communities of Practice: A Brief Introduction, <http://wenger-trayner.com/wp-content/uploads/2012/01/06-Brief-introduction-to-communities-of-practice.pdf>

5. Design Principles

The focus is the intentional design of communities of practice

Communities of practice are widespread although not always recognized as communities. Some are emergent, that is, formed over time by parties with common interests. Others are initiated with a specific intent to bring a group together. Because of the resource constrained context in which it operates, FEMP needs to scan its environment and see if emergent communities already exist and where those communities may be of assistance in its mission. This document is more concerned with encouraging the formation of “designed” communities of practice specifically to support FEMP’s mission and to encourage existing communities to play a supporting role.

There is no blueprint or step-by-step process that will assure the establishment of an effective and active designed community of practice although there are principles that are likely to contribute to it. To be effective, communities need to be formed in a manner that reflects their unique context, needs, and goals. There are a number of principles for designing communities of practice that raise the probability of creating a successful and sustained community.¹⁰

5.1 Design for evolution

Communities of practice are organic and need to be designed in a way that will allow them to evolve their own structure. For the most part, they are self-constructed and self-motivating. They evolve from the interactions among the participants. They can be guided and supported, but a community of practice is not typically created from whole cloth. Rather, communities of practice are fostered by:

- Taking advantage of existing interactions,
- Providing resources,
- Developing structure, and
- Encouraging growth.

The ACEEE Summer Study on Energy Efficiency in Buildings described in the side bar is a good example of the evolution of a community of practice. There are pre-existing connections in which participants come into contact with one another and there is recognition of common interests and needs. This results in communication among the parties on a regular or semi-regular basis, the evolution of a basic structure, an ongoing exchange of ideas, and an ongoing energizing set of activities and events.

The ACEEE Summer Study took the form of a free flowing conference. GovEnergy was a somewhat similar type of community of practice.¹¹ There are other structures such as using a list serve,¹² Twitter, a website, or a blog. Professional societies have long offered professional meetings and publications, but in the past two decades their offerings have expanded to include less formal options like list serves and Facebook pages, which expand the opportunity to exchange ideas more quickly and with less formality.

A community is easier to build if there are preexisting connections

The structure must fit the needs of the community

10 Wenger, Etienne, Richard McDermott, and William M. Snyder. *Cultivating Communities of Practice: A Guide to Managing Knowledge*, Harvard Business School Press, 2002.

11 GovEnergy was an energy, water, and renewables conference that brought together personnel from numerous disciplines throughout government for presentations, training, exhibits, and net-working.

12 Listserv is a commercial product owned by the L-soft Corporation but like many early products the term “list serve” has become a generic term for electronic mail list applications. Similarly, Twitter is the commercial name for a microblog. The commercial names are called out because people are likely to be more familiar with them.

5.2 Open a dialogue between inside and outside perspectives

Communities of practice are peer-to-peer entities, for example, facility engineers interacting with facility engineers or purchasing specialists interacting with purchasing specialists. The community is made up of people with common experiences and common problems seeking solutions. In a diverse community of practice there is a broad base of experience that can be tapped but there is always the potential to lapse into groupthink.

Outsider perspectives are important. As noted earlier, outsider perspectives typically infiltrate at the boundaries of the group brought by interested parties who participate in other types of practice. They often bring new concepts, novel solutions, or methods and techniques that can be applied to the situation.

EVALTALK (see the sidebar) is a good example. This list serve tends to focus on evaluation methodology although there is no shortage of discussion about the theory of evaluation and practices associated with specific types of evaluations as well. The diversity of the participants and the diversity of their experience, from the evaluation of public health programs in tropical Africa to education programs in US K-5 schools, provide a significant experience base. Non-evaluators follow and contribute to the discussion and there are not infrequent cross posts pointing to other list serves or organizations where relevant information can be found.

A Face-to-Face Community of Practice: The ACEEE Summer Study evolved from a small group of mainly DOE National Laboratory staff and others who felt the need to share ideas about energy efficiency in buildings. Initially, it was a small group of people who got together and read and discussed technical papers they were writing. Utilizing some resources from the DOE, ACEEE began providing some structure and continuity. From there, it evolved into a biennial gathering of roughly 800 people with a formal structure for recruiting and reviewing papers for multiple tracks, ad-hoc sessions to explore new topics, and much opportunity to interact and to create new communities of practice. As it evolved, the structure became more formal with organizers, panel chairs, moderators, and sponsors.

ACEEE has institutionalized and cloned the idea in order to form conferences for industrial efficiency, market transformation, human behavior, and other topics. The formal conferences represent places where communities of practice can gather. Other communities of practice have arisen because of the ACEEE Summer Study.

Outsider perspectives are a key driver of community change

A “Virtual” Community of Practice: EVALTALK is a list serve supported by the American Evaluation Association and is open to association members and non-members. Participants post relevant questions or observations and invite responses, discussion, or both. Posts may range from one line to a few paragraphs. Topics are wide ranging, for example: the best way to record and transcribe interviews, how best to analyze data with certain characteristics, good software for Web surveys, how to assess training, the value of and necessity for randomized controlled designs, systems theory, and the nature of government policies such as Internal Review Boards, or clearance of surveys through the Office of Management and Budget.

The list serve has guidelines for participation. Occasionally someone will violate those guidelines and another member on the list may send a rebuke. Once in a while, someone will be disinvited to participate for consistently violating the guidelines and may be banned at least temporarily from further participation.

Levels of participation look very much like those described earlier. There is a core of people who post frequently, a core of more senior evaluators who post less frequently but who weigh in on matters they feel strongly about or consider to be of major concern to the field, occasional posters, and lurkers who may or may not be heard.

EVALTALK is cross disciplinary and includes evaluators in the fields of public health, medicine, education, and human services. A key feature of the list serve is a searchable archive that serves as “institutional memory.”

Diversity contributes to change

5.3 Invite different levels of participation

As previously noted, there is typically a coordinator, a core group, and others whose participation ranges from the relatively active to lurkers who may never be heard from. A key point is that participation varies among participants and individual participation varies through time. As the topics of conversation change, the level of individual interest and participation rises and falls. Core members may go to the sideline while some of those who are occasionally active may assume leadership roles. Furthermore, the boundaries of the community may change as the focus evolves over time.

A “Diverse” Community of Practice: The disciplines represented in a potential community may be very broad and this may influence how the community assembles itself suggesting that care is needed in establishing the boundaries of the community. A too broad community may reduce its usefulness because of the plethora of interests while a too narrow definition of the community may limit participation making the community less vigorous.

Energy Savings Performance Contracts (ESPCs) are a good example. A typical ESPC project may include an engineering assessment involving a facility engineer(s) to manage the process from the client side, approvals from purchasing agents and lawyers at various levels in the contracting organization, an energy services contractor, subcontractors, and others. The choice of a goal or goals will influence who may join and influence the direction of the community.

Examples of goals are to:

- Support new users (site contacts, purchasing agents) to move through the process.
- Support infrequent users of ESPCs.
- Keep purchasing agents updated on ESPC rules.
- Support champions so they can guide the ESPC through the purchasing process.
- Support key decision makers in understanding the requirements.

Given the choice of goals, the community may want to focus on specific disciplines, e.g., end users and purchasing agents. The community could be open to a broader audience. However, there may be concern to limit the participation because of competing interests. For example, while some ESPC contractors may bring special insights to a community, they may want to use the community as an advertising forum.

Thus, thought must be given about how to guide participation. One option is to limit access to the community, another is to set rules about discussion topics, and a third might be to have discussion take place in a moderated forum.

Leadership is important and the boundaries of the community change over time or the community doesn't survive

Successful communities of practice see a continuous flow of participants in and out of the community and from the periphery to the center and back. Many of these transitions result from the changes in roles that people play in their organizations that may make the community of practice more or less relevant.

5.4 Develop both public and private community spaces

To thrive, communities of practice need both public and private spaces for community development. The ACEEE Summer Study and EVALTALK represent public spaces. The Summer Study is a biennial event that brings people together so that they become acquainted, make connections, and have discussions and activities that spill over into the period between conferences. Private discussions take place at the conference and during subsequent interactions. One of the unique features of this conference is the informal sessions. Any conference participant can organize a session on any topic during the afternoons. In a sense these are “public” private spaces where interested attendees identify others with similar interests and can address interests that are not in the formal program. It is not unusual for an informal session at one conference to become a formal topic at a later conference.

EVALTALK is a continuous on-line series (list serve) of “events.” Not infrequently participants on-line take their discussions off-line. The Annual Meeting of the American Evaluation Association (AEA), the AEA Facebook page, the AEA LinkedIn group, and the AEA Twitter feed complement it. There are frequent comments on the list serve prior to the annual meeting that people are looking forward to meeting people with whom they have interacted online to get better acquainted. Some schedule connections. People often choose the sessions they will attend based on the interactions they have had or from having lurked in the electronic media. Face-to-face meetings provide opportunities to enrich relationships and frequently result in new collaborations. The structure of EVALTALK creates a medium within which communities form and actions result.

5.5 Focus on value

During the process of forming a community of practice, the value of the community may not be immediately obvious. In the short term, the value probably resides in sharing problems and needs. Over the long term, a community may build a systematic body of knowledge that can be easily accessed. In the case of the ACEEE Summer Study, there is a set of proceedings with the papers presented, and in the case of EVALTALK, there is the aforementioned archive. Periodically someone on EVALTALK will ask a question, for example, “What is the best way to record and transcribe an interview?” A frequent response is, “Search the archives.” Another response is to provide new contributions to the subject, which serves to update the archives.

Unfortunately, participants don’t always use these resources well. Papers presented at the Summer Study are not often cited by those addressing similar topics at later Summer Studies or at other professional meetings that do little to advance the state of knowledge. Both EVALTALK and the Summer Study could benefit by emphasizing the need to utilize and build upon the institutional memory. One option would be to create FAQs or best practice sheets that briefly summarize key topics. Another might be to use computerized tools such as content mapping. Communities are voluntary and the resources to do this are limited. Providing institutional memory is another role that a sponsor could play.

The fact that people continue to participate or to lurk indicates that a community has value although the value may sometimes be difficult to articulate, at least initially. For some, the value is in the social interactions around topics in which they are interested, the social status that accrues from participating and contributing, and/or the recognition returned by the community.

Ultimately the value is learning from the community, implementing the ideas that one obtains, and discovering that the ideas have contributed to better products and ways of doing things. Wenger et. al. point out that having members of the community recognize and make explicit the value they have received is an important part of strengthening and sustaining a community.¹³ This is a role that the core group or a sponsor like FEMP could play. However, such recognition may take months, even years, because it takes time to implement and recognize the impact of an idea.

Communities of practice can form within communities of practice

An important product of the community is information

To realize its value, information needs to be used

Action is the consummate product of the community

13 Cultivating Communities of Practice: A Guide to Managing Knowledge, *Harvard Business School Press*, 2002.

Participants can have multiple motivations for joining the community

Motivations differ by participants

Communities have energy and rhythms

Wenger et. al. also suggest that it may be useful for the community to discuss its value from time to time. The Home Energy Pros community does this quite well. Their main page features the number of members, photos of community members, and an easy link to community statistics.¹⁴ Such information gives the Web site a feeling of energy, reminds members why they participate, and helps them make better use of the community.

5.6 Combine familiarity and excitement

The ACEEE Summer Study provides good examples of familiarity and excitement. Returning denizens may attend structured sessions that they have created from biennial to biennial. The topics are well understood and the content tends to represent a continuation of content from previous sessions. There is a lot of cultural or “tech speak” in these sessions.

Session chairs may solicit papers and/or groups of papers may be formed into sessions with new and unique content. The organizers try to assign rooms on the basis of expected attendance. One way of identifying the new and exciting is to locate the rooms with overflow. People are sitting on the floor or on the ground outside rooms with windows.

5.7 Create a rhythm for the community

Sustainable communities of practice develop a rhythm that allows the community to anticipate and prepare for events. The EVALTALK community has a continuous flow of interactions but there are crucial events. For instance, the deadline for the call for papers for the annual meeting generates lots of traffic on the list serve. Likewise, just before the annual meeting there are a large number of posts. During the meetings, the list serve “goes quiet.” Because a large number of participants are academics, the volume of posts changes in response to the academic calendar. The number of posts appears to increase just after the end of the semester and decrease just after the beginning of semesters.

Similar kinds of things happen with the ACEEE Summer Study. The Summer Study is a biennial and people begin to discuss topics for the meeting well prior to the meeting.

6. A Starting Place for FEMP to Utilize Communities of Practice

Communities of practice can be an effective strategy as FEMP uses the framework for creating behavioral, institutional, and cultural change (Section 1) by providing practical boundaries for systems targeted for change; analysis of the rules, roles, and tools in specific contexts; and specific, evidence-based ways that peers could intervene to accomplish change. A major value of communities of practice to FEMP is to leverage scarce resources to achieve FEMP’s goals. FEMP can create or use existing networks of interested practitioners to develop and improve the use of energy, renewable energy, and water. Communities of practice can extend FEMP’s ability to communicate about and solve problems. FEMP can develop communities of practice in different ways. It can: identify and encourage FEMP related participants to join an existing community of practice and include content related to energy and water issues in government; work with other agencies to create a community of practice; or choose to create new communities of practice. Because of resource limitations, FEMP may decide to choose some mix of these strategies.

¹⁴ <http://homeenergypros.lbl.gov>

A number of considerations must be taken into account.

1. Communities of practice do have costs. They require basic resources, an organizer, a core group, funds to organize an initial set of activities, and a way to facilitate and maintain contacts within the network to initially support an appropriate level of informal or formal organization. Once a community is formed, it may be able to generate its own resources. In fact, this may be a good test of the potential for a community to be sustainable.
2. Because of their voluntary nature, not every attempt to create a community of practice will achieve lift off.
3. There are a number of problem areas and disciplines around which communities of practice could be formed to leverage FEMP resources. Some examples are identified below but FEMP's interests might best be served by communities that cut across several of these areas rather than focusing on individual ones.
 - ESPCs
 - ENABLE
 - Utility Energy Savings Contracts (UESCs)¹⁵
 - Energy efficient purchasing
 - Facility management
 - Facility engineering

Avoid stove-pipes

The trick in creating or fostering an existing community of practice is helping members or potential members identify themselves, identify their common interests, create social interactions, and find value in the interactions. FEMP's role could be to provide spaces where potential members find each other. However, announcing a community of practice and sending an e-mail blast to a potential target audience is probably one of the least effective ways of creating one because social interaction is more likely to generate a response.

Commitment is needed

In fact, a pre-condition for creating a community is that there is someone or several someones with knowledge of potential participants in the community, shared interests, and sufficient support, who can undergird the initial organizational effort. There is need for a convener or conveners and enough people with time and energy to create a critical mass. In other words, a nucleus of people is needed to create a community of practice.

The nucleus should be a group of people who know or are aware of one another, share similar interests, can work together toward a goal, can provide leadership, are focused enough, and have time and resources to devote to the effort. A good way to find these people is during an event or series of events.

¹⁵ The Federal Utility Partnership Working Group has some of the characteristics of a community of practice with potential to enhance its efforts by taking on more of those characteristics

Leadership is a key

FEMP offers many types of events related to ESPC. These existing events can be used as recruiting ground to create a community of practice. One might offer participants at an on-site ESPC training program the opportunity to participate in and organize a blog, a list serve, or a periodic webinar where experiences can be shared. This might result in a small number of people who would welcome an opportunity to meet and share electronically. Another possibility would be to create a series of webinars that feature program managers who have used the ESPC financial vehicle and invite them to discuss and comment on one another's experiences. The webinar could encourage presenters to organize and present additional webinars and perhaps morph to a list serve or LinkedIn site. This process could lead to a core of people who would form a more robust community of practice. The point is to move beyond providing information to creating social interactions where participants learn from each other, identify solutions to common problems, and then act.

Another example might be to create groups around FEMP award winners who have proven track records of solving problems in specific areas such as ESPCs. As FEMP has good knowledge of these people (and, in some cases, their networks), award winners might be natural catalysts for a community of practice. Their first convening could be in connection with the awards ceremony.

The network is the thing

There are several keys to making this work. The content has to have value to the participants and for FEMP. There has to be a modicum of interactivity. Being able to ask questions during the presentations is essential. Closely spaced events help people begin to recognize each other and know each other's names. Meet-ups at other events can also help people develop personal connections. It is important to expand the list of participants.

In the past, FEMP has used working groups from across government to create guidance documents. Guidance is important and useful. The community of practice would serve as the next step by potentially providing a dynamic environment in which participants would learn how to interpret the guidance and more importantly, identify practical actions to implement the guidance.

Understanding the whole system, not just part of it, is important

Another potential opportunity is with facility managers and facility engineers. The International Facility Managers Association (IFMA) is a professional organization among whose members there are government facility managers. Working with IFMA to target government facility managers could be a win-win for both FEMP and IFMA. An existing association is likely to have a real interest in providing educational opportunities for subgroups of its membership and using the activities as a possible way to boost membership. The EVALTALK illustration is instructive on this point because anyone can join and contribute to the list serve whether a member of the American Evaluation Association or not. It would be interesting to know to what extent EVALTALK results in participation in the Association.

4. Context matters. For example, there are a number of circumstances that could change how one might approach the creation of a community of practice among building engineers. In some cities there are large firms that provide contracted building engineering services. Large buildings have a chief building engineer and associated staff who are employed by engineering service firms. These firms may serve several buildings and multiple owners providing a natural cluster of people who likely meet on a regular basis and could exchange technical information. An issue is whether an engineering services firm can charge the client for the time the building engineers spend participating in a community of practice. In the end, the value is enhanced services for the occupants, the owner, and the building operators, but it may be difficult to convince building owners who are paying that this is the case.

As another example, some cities have building engineer unions. Such unions usually support training of members, but again the challenge may be whether the owner of a building is willing to pay for the participation.

In government centers like Washington, DC, there might be opportunities to form face-to-face communities of practice around government building operations in close geographic proximity. Potential obstacles include who pays – the government, the building owner, or the engineering service providers – and whether engineering personnel are allowed time to participate. If building services are competitive, it might be difficult to convince providers that their employees should share information. In the late 1990s, FEMP investigated the notion of increasing the productivity of operations and maintenance at co-located federal facilities through a teaming arrangement. The inability to co-mingle various agency funds to accomplish this proved to be an unsurpassable barrier. There are signs that the Government Services Administration may have interest in reviving the idea.

Coalescing a community of practice almost certainly takes time and perseverance. The community forms around people who are acquainted with each other and their one-to-one interactions. The effort will only be successful if there is some relatively immediate value for the potential members. The value does not have to be the same for all members of the community. But members have to sense that there is value or potential value in participating. One way to promote this value is for members to help each other find solutions to common problems. Finally, commitment and energy is needed among the participants.

5. Creating a structure for participation should take into account the desired level of formality and mechanisms for interaction.

5.1 Levels of Formality

Communities of practice always have structure. Some individual or group of individuals serves as convener. At the simplest level, the structure may be a group of interested people who meet face-to-face at some agreed upon time and location. The interval may be decided upon and the person to convene the next meeting identified before the conclusion of the previous meeting. Decisions about content may be made on an ad-hoc basis. Such loose and informal structures may characterize early attempts to form groups but are likely to be unstable in the long term because they are dependent on one or a few individuals and their degree of commitment. The ability of individuals to participate can vary and changes in individual circumstances may easily disrupt the arrangements.

An example of such a loose organization might be a community of practice that meets in conjunction with an established organization such as a professional society. At a minimum someone must be responsible for coordinating a meeting place, keeping a list of interested parties, and getting the word out about the next event.

The degree of formality escalates from there. Meeting times for face-to-face meetings may be on a fixed schedule, the group may formally agree on a convener, and there may be a group of individuals responsible for guiding meeting content. A firm or organization may provide resources, for example, time and space in support of the community. At least some of these requirements could be met by FEMP.

Solutions that participants act on create value

The structure must meet the needs of the community

A Multi-channel Moderated Forum Example: In contrast to EVALTALK, Home Energy Pros is an example of a multi-channel moderated forum. Home Energy Pros targets home energy professionals using different communications channels from the same Internet site. The forum was founded in 2010 and has grown to roughly 3900 members. There is traditional list serve functionality showing the latest activity but also organized by thread allowing peer-to-peer interactions. There are event announcements such as regional Home Energy Rating System (HERS) training, the North American Passive House Conference, the Energy & Environmental Building Alliance (EEBA) Excellence in Building Conference, etc. The site has a section for photographs allowing members to comment on unusual situations. There are groups, for example, a Pinterest section, where members can post images, be they arty thermal images or infographics, participants might use with customers. Other groups include HVAC, Energy Auditing Equipment, Trainers and Mentors, and Radiant Control Coatings. Nearly 400 videos provide how to information and discussions of new concepts. There are blogs that focus on technical installation and invite comment and a forum for discussion or debates on topics such as the value of sprinklers.

5.2 Mechanisms for Interactions

Digital media can facilitate creating trans-geographic and trans-organizational communities. List serves, FAQs, blogs, Web sites, Twitter, Facebook pages, LinkedIn sites, wiki sites, and a host of other technologies provide ways for participants to organize and interact. These venues have different levels of structure and formality.

List serves are based on e-mail with a server accepting and distributing e-mails and responses to e-mails. Such list serves can be unmoderated or moderated. In an unmoderated list serve, e-mails are distributed as received regardless of the content. The messaging is instantaneous with no filtering. People can ask questions, provide information, and express opinions but staying within the rules is based on an “honor” system.

The EVALTALK list serve described in the sidebar has rules that limit posts to evaluation-related topics, strongly discourage political commentary, insist on civility, and discourage self-promotion or the promotion of specific books, equipment, software, etc. The manager of the list serve can take actions, but in the case of EVALTALK enforcement usually takes the form of peer pressure. Members are usually polite, but they can and do post about violation of site norms.

Un-moderated list serves may communicate misinformation and/or inaccurate information more or less frequently. Such information may enter the archives and be difficult to root out. In a robust community, other participants may correct such information quickly, although that does not necessarily happen. The user is left with the responsibility to follow the thread and to assess the quality and accuracy of the information.

In a moderated list serve, moderator(s) and/or assistant moderators may review submissions and edit them to provide accurate information. Moderators may also format and organize materials. Moderated list serves are sometimes used in technical forums. The moderation can create delays in responses to questions but it provides some assurance that responses are clear and accurate or identified as incomplete or unanswerable.

The other formats described above, LinkedIn, Facebook, Twitter, and others serve some of the same functions but in different ways. A LinkedIn group operates in a way that is very similar to a list serve. However, the visual formatting is different in that the topic and the responses appear together. Facebook also operates much like a list serve but provides for broader types of media. Twitter messages are short and quite typically contain tiny URLs that link to articles, slide shows, movies, blogs, or Web pages. This is good for sharing ideas but may limit the discourse with respect to the ideas and existing information. It may also reduce the likelihood that members will “correct” incomplete or inaccurate information.

Communities can propagate misinformation

Wikis are a bit different from some of the other modes of communication mentioned above. A wiki is a Web application that allows people to add, modify, or delete content in collaboration with others. Wikis have the advantage of accumulating information so there is a continuous record. With good curation and a good outline (organization), a wiki can be an effective way of conveying information. However, wikis can be constructed through a sequence of independent contributions wherein the power of social interaction is lost. Wikis may complement other types of interactions.

The mode of communication should be chosen carefully to reflect user needs, resources, abilities, and the capabilities that are available. Ten years ago after PCs had been widely adopted, many building engineers still did not use them personally and/or did not use them except for company e-mail. This situation has changed, but it is a cautionary tale about assuming that certain resources are available. Also, some people are wary of digital media including e-mails, LinkedIn, Facebook, and Twitter and may be reluctant to use them.

The American Evaluation Association now provides multiple forums, EVALTALK, LinkedIn, Twitter, Facebook, AEA365 Tip A Day, and others. It appears (an unscientific assessment) that individual members use one or some but not necessarily all of these forums. Further (again an unscientific assessment), the use of the various electronic media appears to break down along generational and perhaps disciplinary boundaries. There appear to be distinct differences in content and communication methods that have implications for the breadth and depth of the conversations. The list serves typically have long interactive threads with reasoned arguments and rebuttals, while Twitter threads are shorter with pointers to ideas or resources or quick takes.

Finally there are hybrid Web sites that utilize various types of media to accomplish their purpose. The Home Energy Pros Web site discussed in the sidebar is a good example.

6. FEMP Communities of Practice: To Be or Not To Be?

In order to assess the likely outcomes of communities of practice in meeting FEMP's goals, FEMP managers must evaluate not only the vibrancy of the communities themselves (the subject of the next section) but also the contributions made to improved energy efficiency. This could be accomplished by some recognition mechanism (perhaps very brief news features under headings such as "I got good advice on ..."), by surveys, and/or by tracking interactions that lead to awards.

7. Monitoring and Evaluating the Evolution of a Community of Practice Is Important

Monitoring and evaluating the community of practice is important both for the participants and for organizations like FEMP that sponsor them. It takes time for communities of practice to form. The community has to have enough energy, value, and time to collect sufficient members to become sustainable. A strong community might take two to three years to be sustainable. Sometimes new programmatic efforts are not given sufficient time to develop and sometimes they are given too much time. Creating a set of expectations or performance measures for how a community of practice might develop and then tracking performance is a way for a community to understand how it is doing. Such measures can provide clues to what the community might need to be doing or what it does not need to do. Collecting performance data also provides clues to when expectations need to be adjusted. Finally, performance data can assist in determining whether the effort to form a community may need to be abandoned.

Feedback is important

Important evaluation questions are:

- What is/are the goal(s) of the community? Is there general agreement on the goal(s) within the community? Is/are the goal(s) evolving?
- How large is the community? Is the size of the community increasing, staying the same, or declining? Is the community welcoming? Are new members joining the community? Are at least some of those joining becoming active contributors?
- Are the levels of interactions increasing? Does the content reflect the goals? Is the content relevant to the membership? Is the community actively helping members to solve problems? Are the solutions helpful and useful?
- Are the contributions balanced among participants? Are the activities of the community meeting the expectations of the members? Is there need for new activities? Does the community have or is there a rhythm emerging?
- Is there evidence that the community is evolving in a way that it will be sustainable in terms of energy, time, financial and physical resources, and support?
- To what extent is the community achieving its goals?

The answers to these questions will change over time. The key issue is whether the community continues to serve a purpose whether the original one or a new one.

8. Summary

What are communities of practice?

- Communities of practice are networks of practitioners.
- They are usually voluntary face-to-face or virtual groups of peers who can share and learn from one another.
- They compound existing relationships reaching people in an exponential rather than a linear fashion.

Why are they useful?

- They can be effective because:
 - They utilize peer-to-peer relationships that are built on legitimacy and acceptance.
 - These interpersonal relationships are a most effective way to communicate and foster change.
 - They focus on problem solving, addressing what to do and how to do it, which is an effective learning strategy.
- They can leverage existing and develop new expertise.
- They can eliminate barriers, facilitate new rules, and create and/or change existing norms.

What do they look like?

- They can vary in size from a few people to thousands. For example, EVALTALK and Home Energy Pros each have more than 3900 members.

- They have a structure. There is usually a coordinator and a core group that may be fewer than 10 people. There is an active group that regularly participates in the community as well as occasional and peripheral members.
- FEMP and FEMP personnel can take on any of these roles but a particularly useful role for FEMP might be that of sponsor.
- They coalesce and disperse with different life spans. They can be sustained over very long periods of time.

How do communities of practice form?

- They evolve naturally or conditions can be intentionally designed to encourage their formation.
- They reflect the unique context in which they operate and meet the needs and goals of participants. Personal initiative and interest are essential.
- They take advantage of existing social interactions, which means that they leverage existing networks.
- Resources – time, money, and networking mechanisms – are needed to support their formation.
- Some level of structure, leadership, and a minimum set of rules are needed.
- Without these elements, the cycle for a community of practice may be short.

What keeps a community of practice going?

- A robust exchange of information takes place among peers.
- Outsider views are welcome and serve to stimulate exchanges.
- Members advance and retreat from the core of the discussions.
- The boundaries of the community can change.
- Participants flow in and out of the community.
- Communities have public and private places where they can meet.
- The community offers its members valuable information and content.
- The community celebrates the value that it provides.
- The community provides and reinforces known content and provides new and novel ideas, methods, and technology.

How does one start a community of practice?

- Look for a cluster of people who could form a community or start with an existing network or community.
- Identify and acquire the resources needed to bring together a core group.
- Identify a group of likely participants.
- Articulate a goal or goals. Develop and agree upon a simple vision that addresses a need.

- Bring potential participants together physically or virtually for a collective activity – getting together to solve a common problem, creating a workshop, holding meetings to develop the idea of a community of practice, creating a discussion paper, creating a session at a professional meeting, or some other endeavor.
- Continue to support and encourage interactions.
- Agree on a level of formality. The formality may change over time.
- Decide on a communication mechanism or mechanism(s).
- Decide upon evaluation criteria.
- Implement.

How does one understand if the community is being effective?

Find ways to determine if the community is:

- Growing in size.
- Increasing the level of repeated participation.
- Producing information and solutions to people’s needs.
- Seeing that people are using the insight and information and reporting back success or failure.
- Modifying its behaviors in response to monitoring and evaluation.
- Achieving its goals or creating more useful new goals.

9. A Checklist for Establishing a Community of Practice

The following is a checklist for persons or an organization such as FEMP attempting to establish a community of practice. These are items that will need to be addressed when creating a community of practice. Keep in mind that the process may be long, so these items may be scored differently at different stages of development.

- There is an initial purpose or purposes for the community of practice.
- There is a defined target audience that the community of practice is intended to engage.
- The boundaries of the target audience are defined but initially flexible.
- There is an initial identifiable group or a method for identifying a group of core participants.
- Members of the core group know of each other or are willing to spend time to get to know each other better.
- There are opportunities or places where the core group can meet face-to-face and/or virtually.
- Members of the core group have the time and resources to help develop the community.
- The core group is willing to commit to the development of the community for the desired purpose.
- There is a strategy for planning for initial events.
- There is support for creating early events/interactions around which the community can form.
- There are mechanisms (Web sites, list serves, etc.) to facilitate interaction among the potential members of the group.
- There is physical and financial support to facilitate the interactions.
- The rules and boundaries of the group are flexible so they can evolve.
- Over time, mechanisms evolve to retain group knowledge.
- Goals are established and progress is tracked.

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